

GRADE 8

STUDENT PRACTICE TEST BOOKLET

Student Name: _____



MEA

Maine Educational Assessment

RELEASED 2015 SCIENCE ITEMS

Maine Department of Education

SCIENCE PRACTICE TEST

This practice session has twenty multiple-choice and two constructed-response questions.

Choose the best answer for each multiple-choice question and mark your answer choices for questions 1 through 20 in the spaces provided on page 2 of your practice test answer booklet.

- 1 Mosquitoes have adapted to detect carbon dioxide using certain sensory nerves. Mosquitoes instinctually move toward greater concentrations of carbon dioxide.

What is the importance of this adaptation?

- A. It helps mosquitoes find food.
- B. It helps mosquitoes find mates.
- C. It helps mosquitoes find clean air.
- D. It helps mosquitoes find shelter.

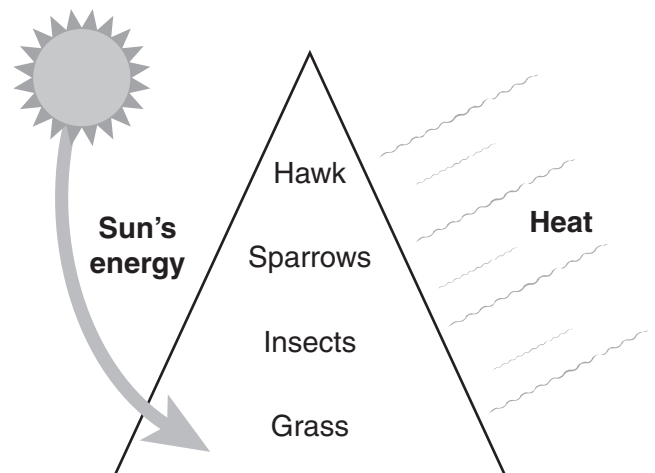
- 2 Which statement describes an interaction between the hydrosphere and the atmosphere?

- A. Flowing water carves through rock to form a canyon.
- B. Lava from an underwater volcano cools to form a mountain.
- C. Ashes rise from a volcanic eruption to block sunlight.
- D. Water vapor rises from the ocean to form clouds.

- 3 What can a moving magnet in a coil of copper wire cause?

- A. an electric current
- B. friction on wheels
- C. an increase in gravity
- D. a decrease in heat

- 4 The pyramid below shows how energy changes forms and is transferred in a food chain.

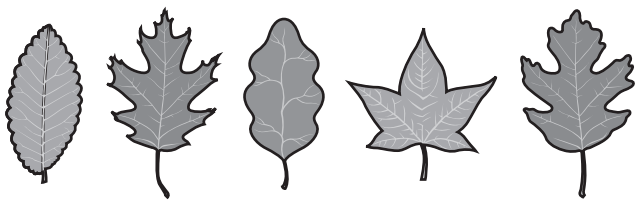


Which statement explains why less energy is available as it is transferred through each step of the food chain?

- A. Heat is added at each level.
- B. Organisms at each level use some of the energy.
- C. The higher levels do not need as much energy.
- D. Organisms at lower levels destroy some of the energy.

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- 5 Leaves from different species of trees are shown in the diagram below.



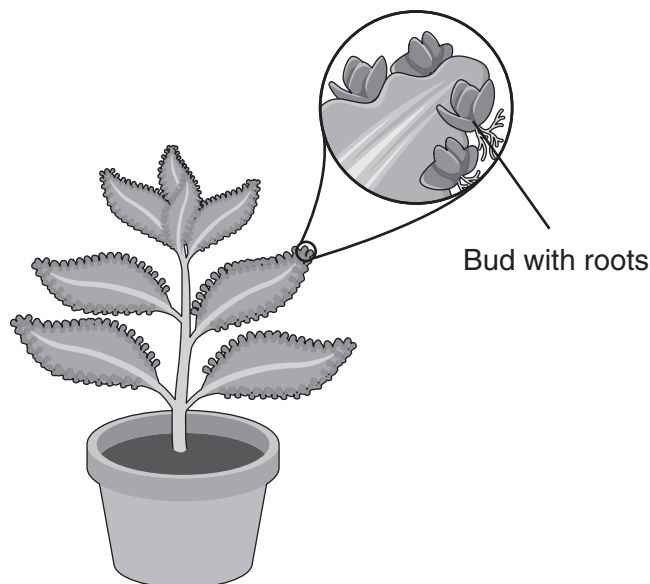
Which characteristic of leaves can **best** be used to classify trees?

- A. age
 - B. color
 - C. shape
 - D. size
- 6 A ball is dropped from different heights. When the ball is dropped from the highest height, it makes the greatest noise or vibration when it lands on the ground. What is the **best** explanation for the ball making the greatest noise?
- A. The air pushes down more and the ball goes faster.
 - B. Gravity pulls for a longer time and the ball goes faster.
 - C. The ball is gaining weight and going faster.
 - D. The ball is warming up and going faster.

- 7 Which two characteristics affect a planet's gravitational attraction to the Sun?

- A. mass and volume
- B. volume and length of day
- C. distance from the Sun and mass
- D. length of day and distance from the Sun

- 8 The diagram below shows a plant with buds.



Which biological process is **best** illustrated by this diagram?

- A. sexual reproduction
- B. asexual reproduction
- C. relationship among organs
- D. relationship among tissues

PLEASE GO ON ➡

- 9 Earth rotates on its north-south axis. Which statement **best** describes one complete rotation?
- A. It takes six months and causes summer and winter seasons.
 - B. It takes 24 hours and causes night and day.
 - C. It takes 29 days, which represents one cycle of the Moon's phases.
 - D. It takes 365 days, which represents one Earth year.
- 10 What are two resources in terrestrial biomes that **most** vertebrates (animals with backbones) compete for?
- A. sunlight and soil
 - B. oxygen and carbon dioxide
 - C. food and nesting areas
 - D. soil and salt water

- 11 The table below shows a page from a student's notebook that describes two different demonstrations.

Demonstration	1	2
Procedure	Heat 10 mL of water in a beaker with a glass disc over the top.	Place 10 mL of ethanol in a beaker with a glass disc over the top. Ignite the ethanol.
Observations	The water inside the beaker eventually disappeared. During heating, water condensed on the bottom of the glass disc.	A blue flame appeared over the ethanol. The ethanol eventually disappeared. As the ethanol burned, water condensed on the bottom of the glass disc.
Student's Conclusion	A physical change occurred in both demonstrations because a liquid turned into a gas and back into a liquid.	

Which statement is the **best** analysis of the student's conclusion about the change in the material?

- A. The conclusion is correct because water was created in both demonstrations.
- B. The conclusion is correct because condensation occurred in both demonstrations.
- C. The conclusion is incorrect because the ethanol in Demonstration 2 underwent a chemical change.
- D. The conclusion is incorrect because the atoms in the water in Demonstration 1 were rearranged to make a new substance.

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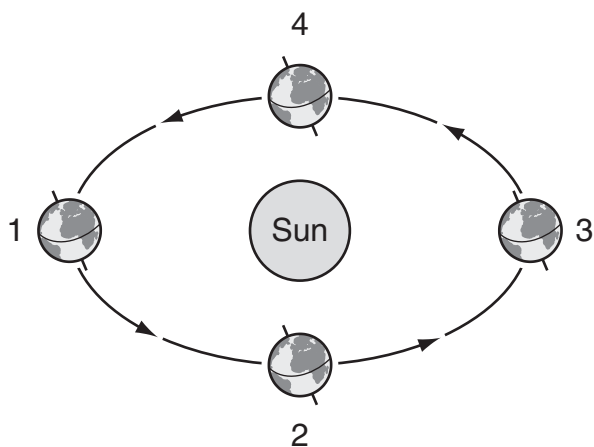
- 12 The table below shows data for some satellites orbiting Earth.

Name of Satellite	Distance above Earth (km)	Mass (kg)
<i>EOS-PM Aqua</i>	680	2,832
<i>Eutelsat W3A</i>	35,786	2,000
<i>Formosat-2</i>	734	631
<i>Galaxy-12</i>	35,786	800

Which satellite should have the greatest gravitational force?

- A. *EOS-PM Aqua*
- B. *Eutelsat W3A*
- C. *Formosat-2*
- D. *Galaxy-12*

- 13 The diagram below shows four positions of Earth during its orbit of the Sun.

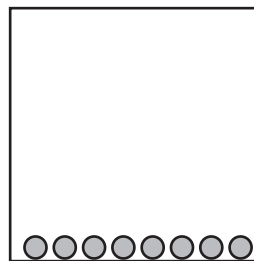


In which position will the Northern Hemisphere of Earth experience the most daylight of the year?

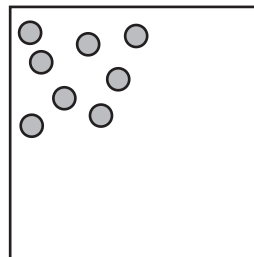
- A. position 1
- B. position 2
- C. position 3
- D. position 4

- 14 Which diagram **best** shows a container with gas molecules?

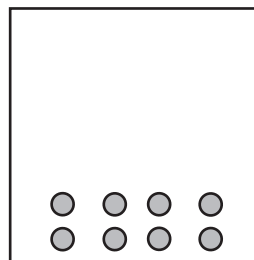
A.



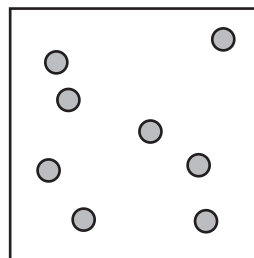
B.



C.



D.



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- 15 Bees can see wavelengths of only yellow, blue, and ultraviolet light. Many plant flowers consist of yellow, blue, and ultraviolet markings that are near the center of the flower. Which sentence describes which organisms benefit from this and explains why?

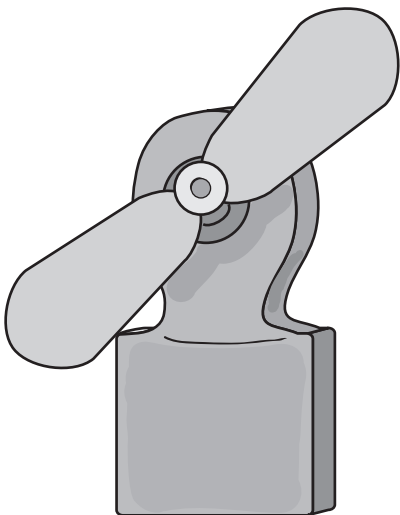
A. Only plants benefit, because bees are unable to reach a food source on the plant.

B. Only bees benefit, because flowers are damaged by bees.

C. Neither bees nor plants benefit, because it does not help either to reproduce.

D. Both bees and plants benefit, because bees find food and plants are aided in reproduction.

- 16 The illustration below shows a small battery-powered fan.



How does the form of energy change in this device?

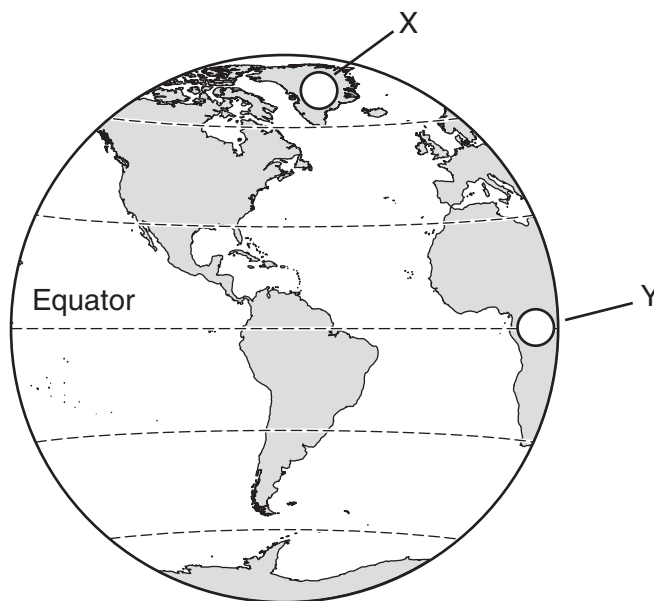
A. electrical to chemical to gravitational potential

B. thermal to electrical to chemical

C. chemical to electrical to mechanical

D. gravitational potential to mechanical to thermal

- 17 The diagram below shows two locations, X and Y, on Earth.



What is the primary cause for the difference between the climates at locations X and Y?

A. the type of land surface

B. the kind of vegetation

C. the number of people present

D. the intensity of sunlight received

- 18 What is the source of genetic information of offspring produced by sexual reproduction?

A. the father only

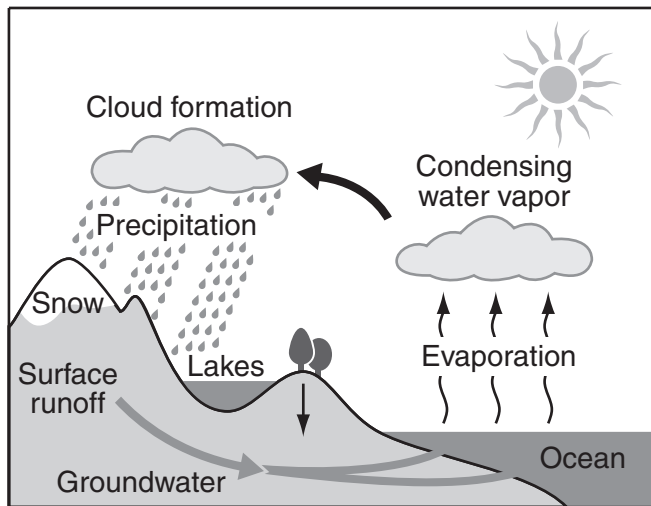
B. the mother only

C. the mother and the father

D. neither the mother nor the father

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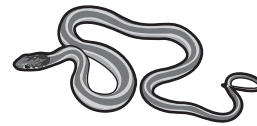
- 19 The diagram below shows the water cycle.



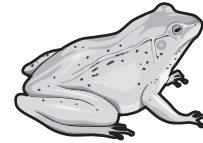
Which statement **best** describes the water cycle?

- A. Driven by the Sun, the water cycle adds new water as precipitation.
- B. Driven by the Sun, the water cycle moves water throughout Earth.
- C. Driven by Earth's internal heat, the water cycle adds new water as precipitation.
- D. Driven by Earth's internal heat, the water cycle moves water throughout the planet.

- 20 The pictures below show four organisms.



Snake



Frog



Tapeworm



Roundworm

Which external characteristic of the snake makes it different from the other three organisms?

- A. absence of segments
- B. absence of legs
- C. presence of eyes
- D. presence of scales

PLEASE GO ON ➡

Write your answers to constructed-response questions 21 and 22 in the boxes provided on pages 2 and 3 of your practice test answer booklet. Be sure to answer and label all parts (a, b, c, etc.) of the questions.

- 21 a. Name **two** units of time that are based on the motion of Earth as a planet.
b. For each unit of time named in part a, describe the motion of Earth on which it is based.
- 22 a. Describe how organs, organ systems, cells, and tissues are related.
b. Give an example of an organ, an organ system, a cell, and a tissue.

